



## 2015 STEM U! Summer Institute

***"INNOVATING THE FUTURE OF STEM"***

### STEM-U! Workshop/Strand Descriptions

#### 1) **STEM For Elementary Students: STEM is Everywhere Lets Go Find It!**

**Grade Band: 3-5**

**Abstract:** Participating K-5 teachers will engage in experiences that integrate practices of science with STEM learning experiences. Teachers will collaborate in a search for STEM phenomenon close to home. Field experiences will take teachers out of the classroom and illuminate how energy can be conserved in homes and develop energy conservation strategies. Teachers will develop ways to connection learning with models of local environments including the homes where children live.

#### 2) **Sewing Up Science:**

**Grades: 6-8**

Traditionally electricity and circuits are taught using breadboards and alligator clips. However, new research indicates that a novel approach using sewable electronics and computing improves student learning and opens up STEM learning to those students who normally do not gravitate toward electric engineering. Come learn how to teach a series of fun projects covered include electric play dough, paper circuits, electronic light up bracelets, and additional wearable circuit projects that cover content concepts and topics around electricity and circuits using engineering design practices.

#### 3) **Sustainable-U: Renewable Energy & Efficiency:**

**Grades: 3-8**

For the 2015 STEM-U program, National Energy Foundation (NEF) will be conducting a teacher professional development strand focusing on energy efficiency, sustainability and renewable energy.



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Participants will receive a STEM-based binder of activities, instructional materials and a kit of instructional supplies. Materials are designed to incorporate a hands-on, minds-on STEM learning approach.

Teachers participating in this strand will learn:

- Solar, wind and water energy facts
- How electricity is generated
- How to integrate the *Solar, Wind, Water and Energy Efficiency Tool Kit* and lessons into their classroom
- Methods for motivating students to TAKE ACTION! at home and involve their families in wise energy practices.

The following information will be covered in the STEM-U four day professional development strand which NEF will conduct with 15 regional teachers:

What is Sustainability and Energy Efficiency?

- Review teacher materials — kit, posters
- "How Things Connect"
- "Energy Awareness Quiz"
- "Take Only What you Need to Survive"
- Introduction to Energy Use in America
- Introduction to Energy Efficiency
  - Appliances
  - Electronics
  - "Load it Up and Monitor the Power"

Introduction to Solar Energy

- "What is Solar Energy?"
- "Solar Thermal Energy"
- "Electricity from the Sun"

Introduction to Hydropower

- "Where's the Water?"
- "What is Water Energy?"
- "Calculating the Power of Water"

Introduction to Wind Energy



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- "What is Wind?"
- "Making Wind Work"

#### **4) Watershed Investigations:**

##### **Grades: 6-12**

Come explore the Logan River Watershed from the headwaters in Logan Canyon, through Cache Valley to the Bear River, and all the way to Great Salt Lake! We will integrate biology, ecology, chemistry, physics, engineering, and technology as we study the health of the aquatic ecosystems along the way. "Get your feet wet" with hands-on aquatic science!